CLAIMS

1. A digital amplifier for amplifying an input digital signal, comprising:

a volume a volume adjusting section for controlling the volume of the digital signal; and

a gain adjusting section for performing gain adjustment by applying compression characteristics to the volume-controlled digital signal.

2. The digital amplifier according to claim 1, wherein the gain adjusting section applies the compression characteristics to the input digital signal, which is converted to an output signal, through a calculation based on an expression $y=a\{1-1(1-[x])^n\}$, where x is the input digital signal, y is the output signal, [x] is the absolute value of x, n is an exponent representing the compression characteristics, and a is 1 for $x\geq 0$ or -1 for $x<0$.

3. The digital amplifier according to claim 2, wherein the compression characteristics are variable by changing the exponent n.

4. The digital amplifier according to claim 3, wherein the exponent n is variable according to an operation of a gain adjusting function.

5. The digital amplifier according to claim 1, further comprising:

a memory for storing an input-output conversion table corresponding to the input-output relationship defined by an expression $y=a\{1-1(1-[x])^n\}$, where x is the input digital signal, y is an output signal, [x] is the absolute value of x, n is an exponent representing the compression characteristics, and a is 1 for $x\geq 0$ or -1 for $x<0$, wherein the gain adjusting function performs gain adjustment by referring to the input-output conversion table.

6. The digital amplifier according to claim 1, wherein the gain adjusting section comprises a digital signal processor.

7. The digital amplifier according to claim 2, wherein the gain adjusting section comprises a digital signal processor.

8. The digital amplifier according to claim 5, wherein the gain adjusting section comprises a digital signal processor.

9. The digital amplifier according to claim 1, further comprising:

an analog input section for receiving an analog signal; and

an analog-to-digital converter for converting the analog signal to a digital signal and providing the digital signal to the volume adjusting section.

10. The digital amplifier according to claim 2, further comprising:

an analog input section for receiving an analog signal; and

an analog-to-digital converter for converting the analog signal to a digital signal and providing the digital signal to the volume adjusting section.

11. A method for adjusting the gain of a digital amplifier for amplifying an input digital signal, the method comprising:

controlling the volume of the digital signal; and

performing gain adjustment by applying compression characteristics to the volume-controlled digital signal.

12. The method according to claim 11, wherein the compression characteristics are applied to the input signal, which is converted to an output signal, through a calculation based on an expression $y=a\{1-1(1-[x])^n\}$, where x is the input digital signal, y is the output signal, [x] is the absolute value of x, n is an exponent representing the compression characteristics, and a is 1 for $x\geq 0$ or -1 for $x<0$.

13. The method according to claim 12, wherein the compression characteristics are variable by changing the exponent n.

14. The method according to claim 13, wherein the exponent n is variable according to an operation of a gain adjusting function.

15. The method according to claim 11, wherein the gain adjustment is performed by referring to a memory storing an input-output conversion table corresponding to the input-output relationship defined by an expression $y=a\{1-1(1-[x])^n\}$, where x is the input digital signal, y is an output signal, [x] is the absolute value of x, n is an exponent representing the compression characteristics, and a is 1 for $x \geq 0$ or -1 for $x<0$.